communication frequencies within each of the radio zones using a time division scheme such that a different one of the N time slots is allocated for adjacent radio zones for each of the plurality of M communication frequencies by sequentially switching from one to another at a time of every N/M time slot.

II. THE PRIOR ART REJECTION

A. The D'Amico, et al. '100 reference, in view of the D'Amico, et al. '593 reference, and further in view of the Gitlits reference and yet further in view of the Barlett et al. reference, and in even further view of the Shi reference, and in yet further view of the Sexton et al. reference

Regarding the rejection of claims 1-4, 6-8, 10-14, 20-21, 24, 30-31, 34-35, and 40-50, the Examiner alleges that the D'Amico et al. '593 reference would have been combined with D'Amico et al. '100 reference and further that the Gitlits reference would have been combined with the combination of the D'Amico et al. '593 reference and the D'Amico et al. '100 reference and goes even further to allege that the Barlett et al. reference would have been combined with the combination of the D'Amico et al. '593 reference, the D'Amico et al. '100 reference and the Gitlits reference and yet further alleges that the Shi reference would have been combined with the two D'Amico et al. references, the Gitlits referece and the Barlett et al. reference and yet further alleges that the Sexton et al. reference would have been combined with the combination of the D'Amico et al. '593 reference, the D'Amico et al. '100 reference, the Gitlits reference and the Shi reference to form the claimed invention. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

The Examiner alleges that the Barlett et al. reference discloses a handover at the same frequency or with a chance to a different frequency. However, the handover of this citation is performed in order to utilize a spare after a call terminates in a cell, and is carried out even when a mobile in question is not moving.

In stark contrast, the handover provided by an exemplary embodiment of the present invention is to allow continuous communications even when a mobile is moving from once cell (zone) to another, and is different from the handover aimed by this citation.

Additionally, the objects of the handovers are also different from each other. The handover in the Barlett et al. reference is to replace a mobile that is using the time slot of a spare to a free time slot, and whether the same frequency will be used or a different frequency will be used is simply dependent upon the frequency of the free time slot. In any case, there is no change in the effect of utilizing a spare.

Moreover, unlike the present invention, even the handover at the same frequency according to the Barlett et al. reference has no effect of realizing a fast handover. The Barlett et al. reference does not teach or suggest the handover at the same frequency, or with a change to a different frequency, that is aimed by the present invention.

Further, none of the applied references teaches or suggests the features recited by independent claim 1 including a system and method that provides N plurality of time slots in one period in each of the radio zones, switching between the M communication frequencies within each of the radio zones using a time division scheme such that a different one of the N time slots is allocated for adjacent radio zones for each of the plurality of M communication frequencies by sequentially switching from one to another at a time of every N/M time slot.

The Examiner admits that none of the D'Amico et al. '593 reference, the D'Amico et

al. '100 reference, the Gitlits reference, the Barlett, et al. reference, and the Shi reference teaches or suggest this feature.

The Sexton et al. reference does not remedy the deficiencies of the D'Amico et al. '593 reference, the D'Amico et al. '100 reference, the Gitlits reference and the Shi reference.

The Sexton et al. reference suggests a concept that frequencies and time slots are compoundedly utilized and assigned to the zones (cells). However, the Sexton et al. reference only discloses two specific examples of the concept.

The object of the handover at the same frequency, or with a change to a different frequency, according to the Barlett et al. reference is to utilize a spare. Whether or not the handover is carried out at the same frequency (i.e., without a change of frequency) is dependent on the frequency of the time slot and causes no change in the effect of utilizing a spare. The present invention can achieve a fast handover by performing the handover at the same frequency, which is clearly not disclosed by the Barlett et al. reference.

Although the Examiner alleges that column 5, line 37 to column 6, line 7 of the Sexton et al. reference teaches switching every N/M time slot, this citation only discloses two examples of time-slot/frequency use, as when twenty one frequencies are provided to a seven-call configuration as illustrated in Figure. 3. One of the examples is the case where three frequencies are assigned to each of the cells, and the other suggests the configuration in which, for one frequency, each of seven different time slots is assigned to each or the cells. Neither of these examples discloses switching every N/M time slots.

Here, assuming that this citation is applied to the present invention, since M = 3 and N = 7, the configuration of switching every 7/3 time slots would be applied to all the seven cells. However, this configuration is not feasible because 7/3 is not an integer. For this

citation to be applied to the present invention, it is necessary to meet the condition that a x M = N (a is an integer), but no such teaching is presented. As described above, the configuration of switching every N/M time slots is not disclosed by the Sexton et al. reference.

In other words, the Examiner cites column 5, line 37 to column 6, line 7 in an attempt to support the Examiner's allegation that the Sexton et al. reference teaches sequentially switching from one to another at a time of every N/M time slot. However, contrary to the Examiner's allegation, the Sexton et al. reference does not teach or suggest this feature, let alone at column 5, line 37 to column 6, line 7 of the Sexton et al. reference.

The Sexton et al. reference discloses a method for adjusting inbound transmission reliability in a two-way messaging system which employs antenna beam-forming techniques with time/frequency reuse distances among a plurality of portable subscriber units.

The Examiner's cited portion of the Sexton et al. reference discusses two examples of a plurality of cells employing a time/frequency reuse pattern in Figures 3 and 4, respectively. The Sexton et al. reference provides a first example with reference to Figure 3 with a time/frequency reuse pattern with a seven-cell cluster.

The Sexton et al. reference explains that, for example, if the system of Figure 3 "has twenty-one communication frequencies and all time slots are utilized by each cell, then each cell would utilize three unique frequencies." (Col. 5, lines 41-43). In other words, for this example, the Sexton et al. reference discloses that the seven cell cluster uses a total of twenty-one frequencies and that, therefore, "each cell would utilize three unique frequencies." (Col. 5, line 43). In other words, the number of communication frequencies M within each radio zone is three (i.e., M = 3).

This example, however, does not disclose how many time slots are in any particular period. Indeed, the Sexton et al. reference merely states that "all time slots are utilized by each cell." (Col. 5, line 42). There is no reference to any period at all, let alone how many time slots are within any particular period. In other words, this example does not provide a value for N.

Further, this also does not teach or suggest any switching at all, let alone sequentially switching from one to another at a time of every N/M time slot.

Therefore, this example provided by the Sexton et al. reference clearly does not teach or suggest sequentially switching from one to another at a time of every N/M time slot.

The Sexton et al. reference also discloses a second example for the seven-cell structure of Figure 3 as providing "a single frequency and seven non-overlapping time slots, each of the seven time slots being uniquely assigned to each of the seven cells." (Col. 5, lines 44-46). In other words, for this second example, the Sexton et al. reference discloses a number of communication frequencies M as being a single (1) frequency (i.e. M = 1) and that there are seven slots N for a given time period (i.e. N = 7).

Since there is only a "single frequency," the Sexton et al. reference clearly does not teach or suggest switching between communication frequencies at all, let alone sequentially switching from one to another frequency at a time of every N/M time slot as recited by the independent claims.

The Sexton et al. reference also teaches that "Other combinations are possible, so long as each cell communicates on either a different frequency or a different time slot from that used by any other cell." (Col. 5, lines 47-49).

If, for the sake of argument, the Examiner were to suggest that one of ordinary skill in

the art would have been motivated to combine the first and second examples which are disclosed by the Sexton et al. reference, such would not be possible since, as explained above, such a combination would not result in N/M being an integer. For example, the first example provides for three communication frequencies (i.e. M = 3), but does not disclose anything at all regarding number of slots, N, while the second example, provides a disclosure for seven slots (i.e. N = 7). Since, 7/3 does not result in an integer, it is not possible to switch frequencies every 7/3 time slots.

This clearly does not teach the feature recited by the independent claims of sequentially switching from one to another at a time of every N/M time slot. Indeed, this portion of the Sexton et al. reference (nor any other portion) does not teach anything at all regarding switching between communication frequencies at all, let alone sequentially switching from one to another frequency at a time of every N/M time slot as recited by the independent claims.

The Sexton et al. reference also discloses that "Co-channel and adjacent channel interference can be reduced by changing the time/frequency reuse pattern to increase the time frequency reuse distance" (Col. 5, line 66 - col. 6, line 1) and introduces yet another example which increases that distance as illustrated by Figure 4. The system that is disclosed by Figure 4 operates in exactly the same manner as the examples described with reference to Figure 3 with the only exception being that the distance between cells within each cluster is increased by increasing the number of cells (from seven (7) to twelve (12)) within each cluster.

Clearly, column 5, line 37 to column 6, line 7 of the Sexton et al. reference does not remedy the deficiencies of the the D'Amico et al. '593 reference, the D'Amico et al. '100

reference, the Gitlits reference and the Shi reference by teaching or suggesting a system and method that provides N plurality of time slots in one period in each of the radio zones, switching between the M communication frequencies within each of the radio zones using a time division scheme such that a different one of the N time slots is allocated for adjacent radio zones for each of the plurality of M communication frequencies by sequentially switching from one to another at a time of every N/M time slot.

Moreover, Applicant submits that these references would not have been combined as alleged by the Examiner. Indeed, the references are directed to completely different and unrelated matters and problems.

As explained previously, one of ordinary skill in the art who was concerned with the problem of the substantial infrastructure investment and complexity that is required when each cell is required to measure and report signal strength to determine whether to hand off a call between cells as the two D'Amico et al. references are concerned with solving would not have referred to the Gitlits reference because the Gitlits reference is directed to the completely different and unrelated problem of a limited number of frequencies being available in a cluster of cells for performing frequency hopping.

Indeed, neither of the D'Amico et al. references teaches or suggests anything at all related to frequency hopping.

In stark contrast to the D'Amico et al. references and the Gitlits reference, the Barlett et al. reference is directed to the problem of diversity combining of GSM cellular radio signals without incurring the cost of additional/duplicate circuitry (col. 1, lines 28-35).

One of ordinary skill in the art who was concerned with the problem of the substantial infrastructure investment and complexity that is required when each cell is required to

measure and report signal strength to determine whether to hand off a call between cells as the two D'Amico et al. references are concerned with solving or who was concerned with the problem of a limited number of frequencies being available in a cluster of cells for performing frequency hopping as the Gitlits reference is concerned with solving, would not have referred to the Barlett et al. reference because the Barlett et al. reference is concerned with the completely different and unrelated problem of diversity combining of GSM cellular radio signals without incurring the cost of additional/duplicate circuitry.

Further, in contrast to the D'Amico et al. references and the Gitlits reference, the Shi reference is concerned with the completely different and unrelated problem of dynamic channel allocation systems which are not able to tell a difference in channel quality and, as a result, will not effectively solve problems related to internal interference and blocking. (Col. 2, lines 4 - 13).

One of ordinary skill in the art who was concerned with the problem of the substantial infrastructure investment and complexity that is required when each cell is required to measure and report signal strength to determine whether to hand off a call between cells, as the two D'Amico et al. references are concerned with solving, or who was concerned with the problem of a limited number of frequencies being available in a cluster of cells for performing frequency hopping, as the Gitlits reference is concerned with solving, or who was concerned with the problem of diversity combining of GSM cellular radio signals without incurring the cost of additional/duplicate circuitry, as the Barlett et al. reference is concerned with solving, would not have referred to the Shi reference because the Shi reference is concerned with the completely different and unrelated problem of dynamic channel allocation systems which are not able to tell a difference in channel quality and, as a result, will not

effectively solve problems related to internal interference and blocking.

Further, and in stark contrast, to the D'Amico et al. references, the Gitlits reference, and the Shi reference, the Sexton et al. reference is concerned with the completely different and unrelated problem of enabling antenna beam-forming techniques that permit inbound transmissions to occur on the same time/frequency channel even though a portable subscriber unit may be moving at highway speeds. (Col. 1, lines 14 - 39).

One of ordinary skill in the art who was concerned with the problem of the substantial infrastructure investment and complexity that is required when each cell is required to measure and report signal strength to determine whether to hand off a call between cells, as the two D'Amico et al. references are concerned with solving, or who was concerned with the problem of a limited number of frequencies being available in a cluster of cells for performing frequency hopping, as the Gitlits reference is concerned with solving, or who was concerned with the problem of diversity combining of GSM cellular radio signals without incurring the cost of additional/duplicate circuitry, as the Barlett et al. reference is concerned with solving, or who was concerned with the problem of dynamic channel allocation systems which are not able to tell a difference in channel quality and, as a result, will not effectively solve problems related to internal interference and blocking, as the Shi reference is concerned with addressing, would not have referred to the Sexton et al. reference because the Sexton et al. reference is concerned with the completely different and unrelated problem of enabling antenna beam-forming techniques that permit inbound transmissions to occur on the same time/frequency channel even though a portable subscriber unit may be moving at highway speeds.

Indeed, none of the other applied references are even remotely related to systems

which rely upon antenna beam-forming techniques that permit inbound transmissions to occur on the same time/frequency channel.

Thus, these references would not have been combined.

Therefore, the Examiner is respectfully requested to withdraw this rejection of claims 1-4, 6-8, 10-14, 20-21, 24, 30-31, 34-35, and 40-50.

B. The D'Amico, et al. '100 reference, in view of the D'Amico, et al. '593 reference, and further in view of the Gitlits reference and yet further in view of the Barlett et al. reference, and in even further view of the Shi reference, in yet further view of the Sexton et al. reference, and even further view of the Horiguchi reference

Regarding the rejection of claims 22-23 and 32-33, the Examiner alleges that the D'Amico et al. '593 reference would have been combined with D'Amico et al. '100 reference and further that the Gitlits reference would have been combined with the combination of the D'Amico et al. '593 reference and the D'Amico et al. '100 reference and goes even further to allege that the Barlett et al. reference would have been combined with the combination of the D'Amico et al. '593 reference, the D'Amico et al. '100 reference and the Gitlits reference and yet further alleges that the Shi reference would have been combined with the two D'Amico et al. references, the Gitlits referece and the Barlett et al. reference and yet further alleges that the Sexton et al. reference would have been combined with the combination of the D'Amico et al. '593 reference, the D'Amico et al. '100 reference, the Gitlits reference and the Shi reference, and even further alleges that the Horiguchi reference would have been combined with the combination of the D'Amico et al. '593 reference, the D'Amico et al. '100 reference,

the Gitlits reference, the Shi reference and the Sexton et al. reference to form the claimed invention. Applicant submits, however, that these references would not have been combined and even if combined, the combination would not teach or suggest each and every element of the claimed invention.

None of the applied references teaches or suggests the features recited by independent claim 1 including a system and method that provides N plurality of time slots in one period in each of the radio zones, switching between the M communication frequencies within each of the radio zones using a time division scheme such that a different one of the N time slots is allocated for adjacent radio zones for each of the plurality of M communication frequencies by sequentially switching from one to another at a time of every N/M time slot.

The Examiner admits that none of the D'Amico et al. '593 reference, the D'Amico et al. '100 reference, the Gitlits reference and the Shi reference teaches or suggest this feature.

As explained above, the Sexton et al. reference does not remedy the deficiencies of the D'Amico et al. '593 reference, the D'Amico et al. '100 reference, the Gitlits reference and the Shi reference.

The Horiguchi reference does not remedy the deficiencies of the D'Amico et al. '593 reference, the D'Amico et al. '100 reference, the Gitlits reference, the Shi reference, and the Sexton et al. reference.

Indeed, the Examiner does not allege that the Horiguchi reference remedies these deficiencies.

Moreover, Applicant submits that these references would not have been combined as alleged by the Examiner. Indeed, the references are directed to completely different and unrelated matters and problems.

In stark contrast, to the D'Amico et al. references, the Gitlits reference, and the Shi reference, and the Sexton et al. reference, the Horiguchi reference is directed to a spread spectrum (CDMA) communication apparatus which is able to perform multiple communications without requiring an increase in the scale of pseudo noise code generators (col. 2, lines 16-20).

While a TDMA system and an FDMA system may be compatible with each other in that a receiver can completely separate the signals arriving on different physical channels, a CDMA system is not at all compatible with either of a TDMA or FDMA system, since the output of a receiver contains small components of all the input signals in a CDMA system. Therefore, since CDMA systems are fundamentally different from TDMA and FDMA systems, one of ordinary skill in the art would not have been motivated to combine the teachings of the Horiguchi reference with either of the D'Amico et al. '100 reference or the D'Amico et al. '593 reference.

Additionally, as explained above, the CDMA system disclosed in the Horiguchi reference is fundamentally different from the claimed invention. Contrary to the Examiner's assertion, the demodulator disclosed in the Horiguchi reference would not be operable in either of the systems disclosed in the D'Amico et al. '100 reference or the D'Amico et al. '593 reference. The demodulator disclosed in the Horiguchi reference at col. 2, lines 28-31 demodulates the reverse spread spectrum received signal. By contrast, the systems disclosed in the D'Amico et al. '100 and the D'Amico et al. '593 references do not operate based upon a spread spectrum. Thus, the references would not have been combined, absent hindsight.

Therefore, the Examiner is respectfully requested to withdraw the rejection of claims 22-23 and 32-33.

III. FORMAL MATTERS AND CONCLUSION

In view of the foregoing amendments and remarks, Applicant respectfully submits that claims 1-50, all the claims presently pending in the Application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the Application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: 1/26/06

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